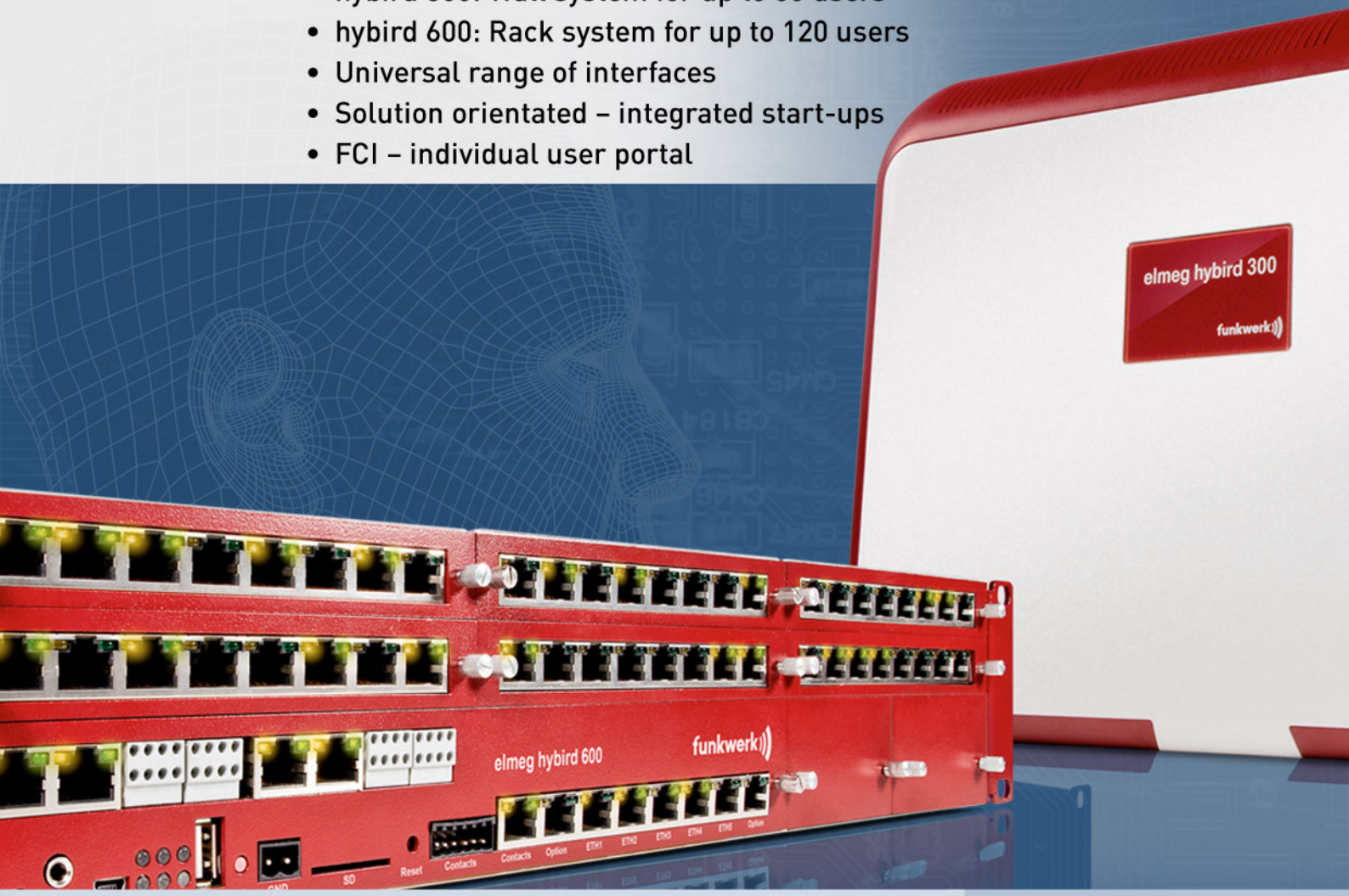
funkwerk
enterprise communications

IP PABX

hybird – the comprehensive communications solution

elmeg hybird 300 / 600

- IP-based voice system for complex solutions
- Highly flexible modular configuration
- hybird 300: Wall system for up to 60 users
- hybird 600: Rack system for up to 120 users
- Universal range of interfaces
- Solution orientated – integrated start-ups
- FCI – individual user portal



hybird 300 / 600

The elmeg hybird systems are the first fully-migrated products that were developed based on a standard software (SW) platform. This SW platform combines the core competences of both the elmeg PABX and the bintec router/gateway products. Hybird stands for the seamless migration of future IP technology with "conventional" technology and supports the appropriate standards (internal and external SIP).

The elmeg hybird systems were developed as pure IP–PABX with the possibility of using hybrid technologies via an extremely flexible module concept. Investment security was of particular importance during the development; i.e. resuing existing infrastructure and equipment such as telephones for example (2nd and 4th existing system telepones via a new SW release), external applications etc.

Both systems do not have fixed TDM ports; meaning therefore that the basic configuration is a pure IP system. A number of interfaces are fixed to the motherboard: External MoH with audio in/out functionality, 2 x V.24 (1 x for service, 1 x for call data output), USB (in preparation), 1 SD card slot, 2 contacts (later release) 4+1 Ethernet interfaces and finally 1 reset key and 1 additional key to switch the module off. In delivery status the hybird licenses for 10 terminals (20 for hybird 600), 2 SIP channels and 5 SIP clients are included.

Connectors

The elmeg hybird 300 offers 3 module slots for traditional (TDM) extension/ line modules for use with up to 60 extensions as a wall system – the hybird 600 rack version supports up to 120 extensions and offers 6 module slots. 4 different modules are available for these slots: Modules 8FXS / Module 16FXS with 8/16 analogue extensions, Module 4S/U+4U with 4 switchable and 4 fixed digital interfaces. The 4 switchable interfaces can be operated in S0 internal / S0 external / Up0 modes, and the 4 fixed interfaces are operated in the fixed Up0 mode. On the other hand the Module 4S/U+ 6FXS implements 4 variable digital interfaces combined with 6 analogue connectors. All extension modules can be optionally equipped with RJ45 plugs or terminal blocks.

In order to ensure future security levels, separate option module slots are available: With respect to media transfer, i.e. the connection from "traditional" technology to IP telephones or to SIP providers, the elmeg hybird can be upgraded if required by a further 2 powerful DSP modules that provide parallel usable media transfers. A further 2 special module slots are provided for in the later release for the operation of S2M and analogue exchange lines.

The hybird systems have a number of performance features available at their disposal; the following list provides detailed information about the various functions.

Management of the hybird is done through the FCI (Funkwerk Configuration Interface) via the web browser.

The setting of important functions via the various individual user portals can be selected personally by the user; the administrator is therefore not required. Individual portals are also available for the various integrated applications (call centre, hotel reception, telephone booking system etc). This allows the authorised employee to look after the administration of the various integrated solutions.

The proven elmeg 2nd and 4th series system telephones are used as terminals. The integration of system telephones into the hybird system, in particular for IP system telephones, has been significantly improved in the development of the elmeg hybird. In a stronger way than ever before, the elmeg hybird looks after the following central adminstrative functions: configuration of the system telephones is done centrally within the hybird, meaning therefore that significant configuration parameters are transferred from the hybird to the system telephones.

Integrated applications

Hotel application
The integrated hotel application is intended for small and medium-sized hotels and guest houses and is a complete solution with its own admin access.

The functions are:

o Check in/out: Releasing/blocking of line access authorisation
o Room status (cleaning) can be set via the room telephone
o Printout of call data with itemised billing
o Configurable cost factor for calls
o Information about existing messages on room telephone (MWI)
o Reception telephone with room function keys
o Wake-up to room telephones

Mini call centre
The mini call centre is also a complete solution with its own admin access and offers a number of functions for a small call centre team that has up to 16 employees within a company. Ideal for small groups that need to communicate both frequently and in a dynamic manner, e.g. Sales Back Office, Support, Order Taking and Processing or Customer Service.

Scope of functions:
o Flexible assignment of lines and agents to call centre
o Dynamic customisation via supervisor (depending on call volume)
o Call centre call assignment (according to idle period of agent)
o Statistical analysis of lines and agents

Voice applications
The integrated voice applications are based on WAV files and offer a number of different solutions:
o Announcement before query:
With the possibility of entering numbers following the voice announcement in order to be connected to the relevant department or to directly select an extension
o MoH:
Individual playing of music in the queue
o Announcement / Infotext:
Brief message for the caller, e.g.: when calling outside of business hours.
o Wake-up message:
Induvidual wake-up messages are played to the guest via wake-up call

In order to be able to customise performance features and applications to the various daily requirements, calendars are used in order to switch the respective application in a timely manner. There are calendars for the following applications: Team (call assignment), day/night service, door terminal functions, Class of Service etc.

TAPI

The newly developed elmeg hybird TAPI interface is 64-bit compatible and allows for a wide variety of CTI applications. The compatibility to ESTOS enables the integration of CTI functions in different applications (Exchange, Outlook, Lotus Notes, Tobit, David, CRM systems etc). All system telephones as well as analogue and ISDN standard terminals can be connected via the "new" TAPI. The interface enables TAPI clients to be connected to the LAN; either with or without using a TAPI server.

External applications server

The connection to MS Exchange implements the following unified messaging functions:
o Voice Messaging – access to messages, appointments, contacts and voice messages by voice/tone dialling; any messages in the mailbox are read.
o Voice control – any messages in the mailbox can be controlled using your voice.
o Answering machine – the exchange mailbox can be used as an answering machine.
o Auto Attendant (16 languages) – transfer of calls with possibility to search in address book as well.

Additional server connections to e.g.: Presence, LDAP, CRM / ERP are currently in preparation.

Mobility:

The new DECT system is connected to the hybird in the form of a DECToIP system via the SIP protocol – without an integrated module. This mobility solution combines two proven technologies: DECT for the connection between the access point and the terminal (good coverage and voice quality), and IP between the DECT base and the elmeg hybird. The coverage can be adjusted to suit the local conditions via the flexibly positioned access points and the DECT repeaters.

IP

The hybird systems can be connected to the LAN via the existing Ethernet interfaces and shall use the existing infrastructural components such as: routers, WLAN access points and application servers. IP system telephones, standard SIP terminals and SIP lines are also connected to the system via the IP infrastructure. It is also possible to integrate offfsite extensions and home offices, or to connect a number of sites via the Internet. The hybird systems implement the transmission of faxes in accordance with the T.38 protocol.

Highlights

Feature	Description
Product name	hybird - the comprehensive communications solution
Architecture	IP-based voice system for complex solutions
Configuration	Highly flexible modular configuration for up to 60/120 users (hybird 300/600)
Extension capability	Universal range of interfaces
Version	Wall/rack system (hybird 300/600)
Solution platform	Solution orientated - integrated start-ups
Configuration	Funkwerk Configuration Interface - individual user portal

Hardware - modular expansions

Feature	Description
Expansion slots	3/6 module slots (hybird 300/600) for expansion modules for extensions/lines
Modules for expansion slots	Module 4SU+4U with 8 digital interfaces (IF), Module 4SU+6FXS with 4 digital extension/line IFs and 6 analogue extension IFs, Module 8FXS with 8 analogue extension IFs, Module 16 FXS with 16 analogue extension IFs
Special slots for: PRI / FXO	2 special slots for separate use of line modules
Modules for special slots	Intended for Module 1PRI with 30 channels, Module 4FXO with 4 analogue exchanges - later release
DSP special slots	2 special slots to be used by DSP modules for media transfers from IP to TDM
Modules for DSP special slots	Module DSP 4 with 4 channels, Module DSP 8 with 8 channels, Module DSP 32 with 32 channels
Modules for overvoltage protection	Module FSM for use on each extension/line module per port to identify any overvoltages

Hardware - Basic configuration

Feature	Description
USB interface (Host)	Not Rel. 1: For connection of a USB stick, or a printer for the hotel application
Serial 1 - Interface for console	Service interface for direct access to system console
Serial 2 - Interface for PC or serial	Not Rel. 1: Application interface for hotel API, printout of charges on serial printer
Contacts	Not Rel. 1: 2 x NO switches, activated by entering code internally/externally
Audio in/out (jack)	Not Rel. 1: Audio in: Connection of an external MoH source, Audio out: Connection of waiting room loudspeaker with continuous music playback and announcement option
Module - Log off key (maintenance)	To log (or switch) the modules off from the 3 or 6 slots
Reset key/factory settings	Restart or reset to ex works state
Status LEDs	Display of operational states
SD card slot	Used for a SD memory card SD 1.0, 1.1, 2.0 (SDHC) to store messages, announcements, charges etc.
12 V voltage	To control a 2nd alarm etc, Load: 12 V, 300 mA
Module power supply (mains unit)	1 module in hybird 300; 2 modules in hybird 600 (module 1 for slots 1-3, module 2 for slots 4-6)
LAN interfaces	4+1: WAN, DMZ configurable via SW
Switch	10/100/1000 Mbit/s, auto sensing
Fans	2 fans (only in hybird 600) 1st fan linked to mains unit 1; 2nd fan linked to mains unit 2

Technical data

Feature	Description
Dimensions	500 x 370 x 75 mm (hybird 300); 440 x 88 x 293 mm (hybird 600)
Housing	hybird 300: plastic housing, connectors in housing; hybird 600: metal rack housing, 2 height units, screw-on metal brackets, connectors on the front side
Power supply	230 V
Power consumption	hybird 300 at rest: 12 W, active: 50 W (modules: 3 x 16 FXS - 50% load, 24 calls in progress); hybird 600 at rest: 12 W, active: 80 W (modules: 6 x 16 FXS - 50% load, 48 calls in progress)
Weight	hybird 300: 2, 5.90 kg without packaging and accessories; hybird 600: 5.2 kg without packaging and accessories
Operating conditions	Operating temperature: +5° C to +40° C; storage: -20°C to +70°C; relative humidity: max. 85 % non-condensing, dry rooms, dust-free
Standards and approvals	R&TTE Directive 1999/5/EC; EN 60950-1:2005 (2nd Edition) and EN 60950-1:2006 + A11:2009; EN 55022 (09/2006) + A1:2007; EN 555024 (09/1998) + A1(2000) + A2(2003)
FXS traffic load (1)	The FXS modules are designed for a long-term traffic load of 30 - 50% of the connected terminals.
FXS traffic load (2)	If this value is exceeded over a long period then this causes the modules to heat up. At 80°C the affected module is switched off for safety reasons.

Content of Delivery

Feature	Description
LAN cable, CAT.5	2 parts per 3m
Network cable	hybird 300: permanently mounted, 1.5m; hybird 600: 1 x 1.5m with IEC connector
Installation and mounting material	hybird 300: dowels, screws, terminal blocks; hybird 600: 2 brackets, terminal blocks, screws
Documentation	Brief start-up procedure manual
Data storage devices	SW, documentation, brochure etc.

Article number

Feature	Description
elmeg hybird 300 Starter Pack. - Item no. 5510000184	Wall System: system telephony, 3 slots for: FXS/S0/Up0, integr. IP Gateway, TAPI, hotel, mini call center, voice applications, VoIP ready, lic. for 10 terminals, 2 SIP channels and 5 SIP clients; incl. M 4 S/U+6FXS, MC CL and prel. M 4 DSP
elmeg hybird 600 - Item no. 5510000185	Rack system, int. version: system telephony, 6 slots for: FXS/S0/Up0, integr. IP Gateway, TAPI, hotel, mini call center, voice applications, VoIP ready, license for 20 terminals, 2 SIP channels and 5 SIP clients; incl. prel. M 4 DSP

Max. system values

Feature	Description
Max. number of ISDN S0 connectors	hybird 300: Total: max. 12; external: max. 12; internal: 12 for the connector of S0 standard telephones or system telephones; hybird 600: Total: max. 24; external: max. 24; internal: 24 for the connector of S0 standard telephones or system telephones
S2M connectors	Not Rel. 1
Up0 connectors	hybird 300: max. 24 Up0 connectors for max. 24 U-system telephones [SysTels] (when using S0 output - additional 24 S0 SysTels); hybird 600: max. 48 Up0 connectors for max. 48 U-SysTels (when using S0 output - additional 48 S0 SysTels)
IP telephones (IP-SysTels)	hybird 300: max. 60 IP system telephones; hybird 600: max. 120 IP system telephones
Internal analogue connectors	hybird 300: for the operation of max. 48 analogue terminals; hybird 600: for the operation of max. 96 analogue terminals
Door terminals	Max. 4 door terminals
SIP provider (VoIP)	Max. 10 SIP providers
External SIP channels	Max. 2 to 65 SIP channels (license model)
Media transfers (TDM - IP)	Max. 40, modules equipped with 4/8/32 channels: only 1 32 DSP module is supported in Rel. 1.
Standard IP telephones (SIP)	hybird 300: 5 to 65, 5 per standard licence, can then be extended in increments of 10; hybird 600: 5 to 125, 5 per standard licence, can then be extended in increments of 10
Calendars/switching points	Max. 20 calendars can be set for all types per max. 10 switching points.
User	hybird 300: Max. number of users: 60; hybird 600: Max. number of users: 120

Options per license

Feature	Description
Voicemail boxes	Additonal voiceboxes: 2 voiceboxes in package - not Release 1
Upgrade of SIP terminals	Additional 10 standard SIP terminals: 5 standard SIP in package
Upgrade of SIP external connections	Additional 5 SIP external channels: 2 channels in package
Upgrade of terminals	Additional 10/20 terminals
Service package 'large' (art.no. 5500000811)	Extension of guarantee by 3 y. to 5 years in total, incl. 24 h advance replacement feature for any 'large' category products of Funkwerk Enterprise Communications. An overview of the category allocation can be found at www.funkwerk-ec.com/servicepackages
Advance replacement	Optional chargeable advance replacement outside of the guarantee period

Maintenance and Service

Feature	Description
Web browser access	Access over ISDN: Configuration, SW update, system status, readout of important system data, tracing, fault diagnosis
ISDN Login	Telnet (console) access, access to diagnostic memory, traces

Service

Feature	Description
Liability	2 year manufacturer guarantee including advance replacement
Software update	SW system, SW management etc.

Security

Feature	Description
Admin password	Administrator system - access for web configuration
Passwords for application portals	Access for web configuration of integrated solutions: hotel, mini call centre, phone book, call data
Password for user portal	User access to web configuration of individual settings
PIN protection for remote access	Remote access to the system is protected by a 6-digit programmable PIN2.

Team functions

Feature	Description
Team function - General (1)	Several extensions are put into teams if they can be reached both internally and externally using 1 call number, e.g. such as: Service, Sales, Development etc. Each extension shall have its 'own call number' within the team.
Team function - General (2)	16 extensions can be put into one team. Divisible call signalling can be configured for each team. Team call assignments are allocated to each team. The switching on of call assignments can either be done manually or automatically.
Release	For a particular team, a release to another team can be configured.
Call assignments	4 call assignments are allocated to each team, these can be switched on either manually or via calendars.
Call forwarding (1)	In the system it can be configured as to whether the call forwarding of individual team extensions is done for 'simultaneous' or 'establishing' team calls.
Call forwarding (2)	It can also be set up whether a call forwarding should be done externally in the VST via call deflection/partial rerouting and should be cancelled if the entire team call is successful.
Call list control (SysTels)	If an answering machine within the team accepts the call, the call will remain in the call lists for all telephones.
Call signalling	Call signalling can be individually configured for each team: simultaneous, linear, rotating, constructing, parallel after a period of time, uniform call assignment according to average talk time.
Busy on Busy	The Busy on Busy function switches the entire team to 'busy' provided that a pre-determined number of team extensions are on the telephone at the time; any further calls to the team are rejected.
Automatic call acceptance (with parallel signalling within the team)	Team calls can be accepted with MOH; the team extensions are then called in parallel. Once a team extension accepts the call, the connection is made.
Transfer functions	Transfer functions can be configured for each team: busy options, release options, transfer to busy extensions, automatic release immediately/if busy/if no reply.
Team announcement (1)	The team announcement function makes it possible to make an announcement to the team extensions. The team extensions hear the announcement at the same time; a notification tone signifies the announcement.
Team announcement (2)	The announcement can be accepted by lifting the handset. A direct connection is then made. Not Rel. 1
Team call signalling to internal/external terminals	The team call signalling can be done to internal team extensions or to external call numbers. The allocation is done in the call assignments, which can be controlled via the calendars.
Team log in/log off	Team extensions can log themselves in and out of the team. This is possible for both individual as well as all teams; if all extensions are logged out then a call is released to the default destination.

Door terminals

Feature	Description
Door terminals - General (1)	Door terminals can be switched on on internal FXS ports. For each door terminal, 8 internal extensions or 1 external call nr. (chemist's circuit) are included in the call signalling each time it is rung. Refer to call signalling in the day/night service
Door terminals - General (2)	Door terminal authorisations (call door terminal/open door) are done via the CoS. The door terminal switching authorisation (day/night) can be configured for each extension via CoS; door intercom calls can be picked up.
Doorbell signalling	The signalling time can be programmed for both internal and external use. The monitoring can be switched on or off.
Door terminal external call monitoring	A timer limits the call duration. Can be configured for each door terminal and doorbell
Door terminal call signalling	The call signalling duration can be adjusted.

Configuration access

Feature	Description
General configuration	Configuration of the hybird is web-based and is done via the 'Funkwerk User Interface' (FCI). The following are supported: Internet Explorer Version 7 or higher, Firefox Version 2 or higher
Web configuration	Configuration access is implemented both locally and remotely via IP: HTTP/HTTPS without signed certificate.
Remote configuration via ISDN (1)	Access to the hybrid can be done both remotely as well as via S0. Remote web browsing accessed via external ISDN S0 with X.75 / HTTP protocol
Remote configuration via ISDN (2)	Remote access can be enabled for 30 minutes or permanently; access only by dialling with special service configuration management tool
Remote maintenance	ISDN Login/Telnet access
Firmware download	Via IP
DIME Manager support	The hybird can also be configured via the DIME Manager.
Management	Management via SNMP, SSH
SNMP browser	Integrated in FCI

Voice applications

Feature	Description
General voice applications	Voice applications are based on WAV files with music, announcements etc. Max. 8 voice applications can be configured as: announcement before query, infobox, wake-up message or MOH; WAV files are stored on the memory card (SD).
Announcement before query (Auto Attendant) - includes IVR (Interactive Voice Response with DTMF)	When in 'Announcement before query' mode, the call is automatically accepted via the application and a WAV file with instructions is played. Automatic transfer function by dialling the corresponding extension no., or the DISA speed dial number
Announcement/infotext	A WAV file can inform the caller of any changes to opening hours in the form of an announcement/infotext.
Volume control of files	The WAV files can be adjusted by a volume control.
Wake-up message	Wake-up calls for guests can be set up in conjunction with the hotel application.
Music on hold	Music on hold (MoH) can be configured based on WAV files.

Call transfer

Feature	Description
Hold for enquiry	Can be freely executed on all internal or external extensions. Possible functions: Disconnect active connection, disconnect connection on hold, redial. The extension on hold shall hear MoH.
Hold for enquiry	Hold for enquiry from an active connection to an internal/external extension. The other extension is held in the system.
Transfer to busy extension	A call can be transferred to a busy extension. At the end of the call the connection is made. Automatic return to the original extension after time has expired.
Exchange to exchange transfer	Following the return of an existing exchange connection to the exchange, both external channels can then be interconnected. Not available for FXO
Transfer without advance notice (blind	Transfer a call by replacing the receiver from the hold for enquiry.
Transfer with advance notice	Transfer a call by replacing the receiver from the hold for enquiry after notifying the extension
Transfer (ECT)	Transfer of calls in exchange (if LM available). Can be reached via FCI, although external-external ECT is allowed.
Transfer of active call through call waiting	Analogue terminals can transfer the incoming call with R5 etc whilst on the call via the code procedure.

Compilation of call data

Feature	Description
General compilation of call data (1)	Compilation of records in FLASH with: iinternal extension no., external call number suppressed/shortened/not shortened), date/time, call duration, currency amount, project number, connector type, exchange line no./MSN/DDI index;
General compilation of call data (2)	can be configured for each extension; storage of incoming calls either generally or only by entering a project number.
Output of records	Available
Project and client numbers	For assignment to projects or clients. Incoming and/or outgoing calls can be assigned either by entering a code that consists of a max.6-digit nummer in hold for enquiry, or via the 'Keypad' procedures.
Storage of records per user can be configured (1)	Possible output of call records on V.24 printer. Output of records in currencies standardised by a ratio of 1/1000; the factor and currency text can be configured.
Storage of records per user can be configured (2)	Shortened numbers are indicated with # character. Printout via V.24 can be switched via PABX menu
Call records in memory	2000 records are held in the memory.
Shortened storage of external call	The storage of shortened call numbers (privacy) is possible.

Mobile extensions

Feature	Description
Mobile extensions - General (1)	Integrated application: parallel signalling of incoming calls to an internal terminal and an external call number (e.g. mobile phone). The assignment can be switched on or off via a code.
Mobile extensions - General (2)	The parallel call is initiated by directly dialling the internal extension. During the external connection, hold for enquiry and call transfer to hybird extensions are both possible via DTMF code procedures.

TAPI

Feature	Description
TAPI - General	TAPI is supported for: TDM and IP system telephones. MS Windows XP, Vista, Win7. Support for 32 bit/64 bit, 1st and 3rd parties via LAN, TAPI authorisation for each extension can be adjusted via Class of Service
TAPI functions (1)	Automatic call acceptance via elmeg system telephones, incoming and outgoing calls, call forwarding, hold for enquiry, brokering, call transfer, three-party conference call, call waiting, charge information, call deflection, pickup of calls
TAPI functions (2)	Signalling of call forwarding number(s), MSN/DDI signalling, cause signalling, specified pickup, park/unpark

User - configuration portal

Feature	Description
User-configuration portal - General	Each user within the system has access to their own telephones and settings. Individual user names/PIN are accessed via the user portal.

Application portals

Feature	Description
Application portals - General	For the integrated solutions, i.e. hotel, phone book, mini call centre, call data etc, the individual application portals are available.

IP and routing functions

Feature	Description
DHCP	DHCP Client/Server/Proxy for easy configuration of TCP/IP
DNS client	DNS Server/Proxy/Relay support
Integration into existing LANs	Available
IP accounting	Detailed IP accounting, source, destination, port, interfaces and counters for packets and bytes sent can also be transferred to the Syslog server via the Syslog protocol
IP packet filters	Filters of IP packets with the aid of different criteria such as IP protocols, source/destination of IP address, source/destination of port, TOS/DSCP, Layer 2 priority for each interface can be configured in a different manner
NTP Client/Server	Automatic update of date/time from time server. Internal time server for connected IP terminals.
QoS / TCP Download Rate Control	Used to reserve bandwidth for VoIP connections.
Scheduling	Control of actions as well as time and event-controlled, e.g. such as Reboot Device, Activate/Deactivate Interface, Activate/Deactivate WLAN, Trigger SW Update and Configuration Backup
Stateful Inspection Firewall	Directional packet filtering with monitoring and interpretation of the respective status of each connection
Switch Port Separation	hybird makes it possible to run the switch ports as one interface or to logically separate these from each other and to configure them as independent Ethernet interfaces.
System logging & status information	Hybird has both logging and status information available
VLAN	VLAN tagging on IP interfaces can be configured
System interface, sub-system operation via IP	For the system interface, 2 systems are interconnected via a bidirectional connection - without global performance feature. The sub-system operation represents a single connection from the main system to the sub-system.
Connector to SIP providers	The connector to the SIP providers can be done either via an individual call number or via a DDI.
Connector of standard SIP terminals/IP system telephones (1)	Standard SIP telephony in LAN; telephony via (WAN) SIP providers; general SIP and router settings: SIP RTP port, TOS value (SIP packets), TOS value (RTP packets)
Connector of standard SIP terminals/IP system telephones (2)	System telephony with IP-S290 & IP-S400 (tunnel for ISDN SysTel protocol via RTP), FW download via http; VoIP protocol with the IP SysTels when using compressed codecs
Number of simultaneous SIP	The number of simultaneous SIP connections per provider can be configured.
Offsite extensions	Offsite extensions can be set up with IP system telephones or SIP telephones.
Bandwidth management with support for multiple locations (1)	Locations can be set up in order to use the bandwidth management. A location is identified with the aid of its fixed IP address or DynDNS address, or by using the interface to which the device is connected.
Bandwidth management with support for multiple locations (2)	The available VoIP bandwidth (upstream and downstream) can then be set up for each location.
Codecs	Codecs G.711, G.726, G.729, DTMF Inband, DTMF Outband, SIP Info, T.38
Codec profile for locations, SIP providers or IP terminals	Different codec profiles can be defined in order to influence the voice quality and to establish certain provider-relevant provisions. Codecs can be sorted and offered in accordance wtih a nr. of different criteria: E.g. acc. to quality, bandwidth etc.
Early media connect	Early media connect connects voice or audio data (e.g.: announcements) before the call was accepted.
Quality of Service	DSCP header/ToS bit configurable
SIP 2.0	Conforms to RFC 3261
STUN	A STUN server is required to allow VoIP devices access to the Internet behind an active NAT. This determines the current public IP address for the connection and uses this for remote addressing.
T.38	Fax support
Dialling end identifier/shortening via #	The time after which the system begins to dial externally; i.e. after dialling the last digit of a call number. The time can be shortened by entering #.

Mini Call Centre

Feature	Description
Mini call centre - General	Integrated solutions for up to 16 agents ffor small groups that need to communicate both frequently and in a dynamic manner. The administration is done via a separate portal.
Functions	Flexible assignment of agents and lines, dynamic customisation depending on call volume, call assignment with idle periods for agents, statistical information on agents and lines
Post-processing time	A 'post-processing time' function key can be set up for each agent on the system telephone. When activated, the agent shall not be assigned any further calls for a defined period of time.
Status information (1)	Different status information is displayed, e.g.: lines and assigned agents, number of agents logged on per line.
Status information (2)	Agents in post-processing, active calls (active connections), calls on hold, number of calls accepted today, number of missed calls today.

DECT connection

Feature	Description
Singlecell/multicell via LAN	In preparation

Hotel functions

Feature	Description
Hotel function - General	Integrated functions. This is operated from reception telephones via the system menu on the elmeg Hybird.
Check in/out	A check in/out can be done from the reception telephone (SysTel). Here the room telephone authorisation is switched on and the charges are deleted following notification.
Call cost output on printer/display in SysTel	Output of charge meter in PABX menu, output of charge records and total lines via printer (PC) on hybird V.24 connector. Hotel-specific text headers and trailers can be edited for the printout
Hotel charge factor	When reading out or printing the call records upon check out via the PABX menu, any call records incurred are then multiplied by the cost conversion factor.
Switching hotel MWI from the reception telephone	Generate MWI to internal ISDN and analogue terminals (can be configured via MWI extension flag), along with possible callback function from hotel room.
Hotel portal for reception	Password protected access to hotel application configuration
Hotel room key (check in/out, status	Function key for direct check in/out, room status display
System telephones: Reset personal information	Automatic resetting of automatic redialling, call lists and other personal data when in hotel check in/out, or manually via code programming procedure if extension data/LMs are deleted.
Wake-up function	A wake-up call can be set up from the guest/reception telephone. The wake-up call is a call that plays music on hold.
Room status setting from telephone	Not cleaned, cleaned, cleaned and checked

PABX functions I

Feature	Description
Alphanumeric central phonebook	1000 entries in phonebook, individual authorisation for phonebook access, import/export possibility, name display on phonebook
Analogue ports - internal	To connect analogue terminals: MFC dialling method, adjustable flash times, setting as: phone/fax/modem/answ.machine/combination device, name display on phonebook for (CNIP/CNIR), transfer of phone numbers to internal analogue ports (CLIP, CLIP off Hook)
Internal call waiting	Call waiting is signalled by a call waiting tone on FXS ports. Possible procedures: ignore call waiting (timeout after 30 secs), accept directly, accept through hold for enquiry, reject
Call waiting protection	The call waiting protection is configurable per FXS extension (Ext.) as well as via Class of Service (CoS); the ext. is implemented in the terminal for ISDN extensions.
Do not disturb feature for internal ports (1)	The do not disturb feature (at rest) for FXS ports is configurable for a) just internal calls, b) just external calls, or c) internal and external calls;
Do not disturb feature for internal ports (2)	a special dial tone signals that the do not disturb feature is active; it shall however be possible to accept calls whilst in do not disturb mode.
Call assignments	Team and door terminal lists can be automatically switched on via programmable weekly calendars. It shall be possible for an authorised extension to manually switch on
Set up call forwarding remotely	Call forwarding can be remotely carried out in the system.
Call forwarding (CF) immediately/after a period of time/when busy (1)	This function can be set: immediately, after a period of time, when busy (parrallel operation also possible); signalling of 'forwarded calls' with call forwarding number
Call forwarding (CF) immediately/after a period of time/when busy (2)	Set up of call forwarding for internal extensions via user portal as well. The call forwarding set up is also possible with standard telephones via the telephone code procedure; this can also be done externally via the 2nd B channel.
Call forwarding during a call (CD - call deflection)	Automatic call deflection to PtMP connector if an incoming external call is to be forwarded externally.
Call forwarding during a call (partial rerouting) for PtP	Automatic execution if a internal extension has set up an external call forwarding. In the event of failure the call forwarding is done via the 2nd B channel.
Release (if dialled incorrectly, or if no answer)	Release to a configurable destination in the event of: incomplete DDI (after a period of time); if dialled incorrectly and if all team extensions are logged out etc.
Call assignment	External calls can be flexibly assigned to extensions, teams or to voice applications as well.
Exchange access right	The exchange access right can be set at different levels per user: internal, incoming, local, national, unlimited.
Switchable exchange access right	The exchange access right can be controlled via the calendars through appropriate authorisation in the CoS
Automatic outside line	The automatic outside line is configurable per user; an internal number can therefore be dialled by pressing *
Service-specific exchange access	A line with 'Fax G3 service can be occupied by dialling a code from a FXS terminal (combi port).
Global exchange access	The dialling code (typically 0) can be programmed freely.
ARS	Automatic route selection (LCR) is a dial control with a telephone number-dependent bundle selection. ARS is configurable per extension via the CoS.
Authority matrix (Class of Service)	The CoS contains a list of functions for the user; the CoS can be switched via the calendars/manually.
Bundle formation/division	Authorisation to assign a bundle is done via the CoS.

PABX functions II

Feature	Description
Specified bundle assignment	The bundle assignment can be done via the code on standard terminals or via the bundle key on SysTel.
Call Through (1)	Dial 'via system': An incoming call over ISDN or a SIP provider can be used for call through following authentication with the aid of the PIN and CLIP of an outgoing line (ISDN, SIP provider and POTS).
Call Through (2)	Cheap tariffs, e.g. when dialling abroad, can therefore be used. When the ARS is switched on, routing is also possible via internal analogue GSM gateways (release option).
Boss/secretary function	Functional linking of 2 system telephones - routing of calls via call function
CLIP no screening for point-to-points	Sending of call number that does not belong to connector, e.g.: as central call number for call centre. Application to the provider necessary
CLIPO (Calling Line Identification	Transmission of suppressed numbers to special connectors (e.g. police)
Data protection for analogue extensions	The data protection option prevents call waiting for analogue faxes, modems and door intercoms.
Date/time	Implemented through clock component, clock software, time servers etc. The clock can be adjusted via FCI, synchronisation with ISDN network time is possible. Automatic changeover to summer/winter time
Diagnostic function	Fault logbook and diagnostic history memory in the system (to be saved to SD card)
Direct call	Automatic call setup after x secs to a preset destination after the receiver is lifted without dialling; can be programmed per user, special dialling tone for active direct calls; adjustable reaction time of 0 - 39 secs can be adjusted centrally
Three-party conference call	Up to 8 three-party conference calls for TDM terminals. Possible procedures during the conference call: Disconnect individual extensions, return to active connections and connections on hold
Announcement/announcement block	Announcement to system telephone with notification tone for both the calling party and the called party; can be set per extension
Advanced call assignment for point-to-points	Additional MSNs (exceptional call numbers) that can be configured centrally for all point-to-points. For non-configured call numbers, the call is released to a configurable global default destination.
Fax connection possibility	Connection possibility of a fax to analogue or ISDN internal connectors:
Follow me (1)	Tracing of call diversion of internal extensions via the code procedure; configuration of follow me function externally possible by dialling externally in the PABX (service call number) - protected by PIN2
Follow me (2)	The remote switching authorisation is set centrally.
Charges (1)	Transmission both during (AOC-D) and at the end (AOC-E) of the call in units or currency amounts; operation of pay phones at the internal So bus possible
Charges (2)	Forwarding of charges to internal analogue/digital connectors, charge pulses 12 kHz/16 kHz, charge meter per extension
GSM gateway	GSM gateways can be switched on on hybird external ISDN ports. The automatic routing via ARS can be adjusted. The post-dial delay on analogue GSM gateway ports can be configured centrally, the ISDN clock synchronisation can be switched.

PABX functions III

Feature	Description
Pickup	Pickup of calls to other extensions: Pickup within a group; group assignment can be programmed per extension.
Pickup specified	Specified pickup by entering the extension call number; this covers all groups
Pickup of answering machine	Pickup of a call that has already been answered from an answering machine
ISDN connectors point-to-multipoint/point-to-point with	In the hybird both external point-to-points (P-P) as well as point-to-multipoints (P-MP) can be set up.
Calendar (PBX Day/Night, CoS, door intercom, teams) (1)	Time-dependent switches via the calendars for: 'Authorisation class', 'Night operation', 'Team signalling', 'Door terminal signalling' and 'Release to internal/external call numbers'
Calendars (PBX Day/Night, CoS, door terminal, teams) (2)	Several different switching times can be selected for each weekday. Exceptions for public holidays can be configured
Changeable codes for important functions	Programmable telephone codes: exchange access, pickup, specified pickup, speeddial number, project number, bundle assignment, open hold for enquiry
Keypad procedures in exchange	Control of performance features in the exchange, authorisation per extension in the CoS
Speeddial number	Access to entries in the phone book via a code combined with the respective entry index (000-999)
Layer 2 on exchange connector	The ISDN Layer 2 is kept active non-stop. Can be configured per exchange connector
Brokering	Any change between internal and external connections; the respective caller on hold hears MoH.
Save message on SysTel	Signalling via UUS 1
Name display in the call and in the connection	During the call as well as during the connection, the caller's number is displayed (CLIP). If the call number is entered in the phone book, the corresponding name is displayed.
Name assignment for connectors, terminals and teams	In the configuration, names can be assigned to the individual ports. For internal calls the name is displayed on the terminal. In addition the name is also visible in the PABX menu and in FCI, as well as on the terminal for team calls.
Emergency functions with priority circuit (blockade break for ISDN)	A terminal that is configured as an emergency telephone disconnects an occupied exchange port if it is attempting to use an exchange. Any internal extensions can be configured as emergency telephones.
Emergency number storage/emergency telephone/alarm point-to-point (1)	In the hybird, 10 emergency numbers (up to 20 digits) can be set up. The occupied ISDN exchange is then subject to a blockade break if one of the saved emergency numbers is dialled.
Emergency number storage/emergency telephone/alarm	The emergency number dial is, provided that all exchange lines (incl. SIP provider) are occupied, always routed via ISDN (VoIP blocked).
Open hold for enquiry - park in system	By using the open hold for enquiry function, the caller is held in the system queue. The call can be transferred to any telephone via the code procedure or with SysTel park keys.

PABX functions IV

Feature	Description
Internal and external room monitoring	Room monitoring via a telephone that has been approved for this and whose receiver has been lifted or whose hands free has been switched on. Room monitoring can also be remotely activated.
Separation of direction	A fixed exchange/bundle assignment can be configured for each user.
Call number plan	Flexible internal call number plan can be programmed in a variable manner from 1 to 4 digits
Call number prefix	The national/international dialling code can be set up centrally.
Call number transmission/suppression	The transmission and suppression of call numbers is implemented in the hybird via (CLIP/CLIR/COLP/COLR)
Ringing AC voltage (frequency)	For all FXS ports, the frequency of the ringing AC voltage can be adjusted centrally between 25/50 Hz.
Callback on Busy	If a caller is busy then a callback can be initiated. The ISDN feature 'CCBS' is used here. Callbacks can also be requested and deleted. Callbacks are however not possible via SIP providers and SIP terminals.
Callback on no reply	If a call is made to an available caller then a callback can be initiated. The ISDN feature 'CCNR‘ is used here. Callbacks can also be requested and deleted. Callbacks are however not possible via SIP providers and SIP terminals.
Broadcast call (1)	Team extensions are called using the 'broadcast call' function. Possible call allocation settings are: 'simultaneous', 'linear', 'rotating', 'establishing' and 'longest free'.
Broadcast call (2)	An additional team call option to the 'linear' and 'rotating' functionality is the 'parallel after a period of time' signalling.
Day/night operation	Switching to the respective operating status for the enitre system
Display extension status data	The current settings for a particular user can be displayed. Call number (MSN), name, current authorisation class, assigned interfaces, costs
Appointment call/wake-up call	For telephones in hotel rooms, a wake-up call can be set up by the guest or by reception.
PABX menu	Access to system functions of system telephone: phone book, follow me, direct call, hotel functions, editing of public holidays in calendars
On-hold queue	Callers can be switched to on-hold queues and then retrieved by pressing the correct code.
Music on hold	The MOH to be used for each extension can be configured via Class of Service. Options: no MOH, internal melody 1, internal melody 2, external connector, voice application MOH (external source via jack or WAV file)
Queue	The number of calls on-hold for the team can be individually set.
Return call (1)	A return call shall occur: when put on hold for enquiry, when dialling, when busy, if transferred incorrectly; after a period of time (30 secs). Return call from open hold for enquiry
Return call (2)	The time for the return call can be adjusted separately for iUbA, busy and open hold for enquiry.
Dial control (blacklist/whitelist)	Up to 30 16-digit blacklist numbers and up to 60 16-digit whitelist numbers can be set up in the system. Assignment to the various extensions is done via the CoS.
Simplex operation/simplex operation block	Simplex operation is typically only possible with SysTels. By using this function, the called device is switched immediately to hands free mode and the call is accepted. A simplex operation is ended after 2 minutes for security reasons.
X.31	Connection of X.25 Point of Sale terminals (data transmission in D channel) X.31 case B; up to 4 TEIs with fixed internal/external allocation can be configured
Central configuration of (system)	Installation and administration of important system telephone parameters in the hybird